WHAT IS CLAIMED IS:

1. A system for head positioning control that includes seek control, used to move a head to a target position on a disk, and track following control, used to position the head in a target area related to the target position, comprising:

means for detecting a position error between a position of the head and the target position;

means for calculating, from the position error, a feedback value used to eliminate the position error;

adaptive learning means for acquiring, by adaptive learning, a runout component that is included in the position error and synchronous with a rotation of the disk;

means for calculating a feedforward value used to suppress the runout component acquired by the adaptive learning means;

means for generating, from the feedback value and the feedforward value, a control amount used to position the head in the target position;

a rewritable memory to store initial values used in adaptive learning executed by the adaptive learning means, the initial values being values of the runout component obtained in respective predetermined radial positions on the disk; and

determination means for selecting, from the memory, one of the initial values, used in adaptive

learning by the adaptive learning means, in accordance with the target position, and supplying the selected initial value to the adaptive learning means.

2. The system according to claim 1, wherein the determination means includes means for replacing, when it is necessary, during the track following control, to switch the track following control to the seek control for moving the head to a new target position, one of the initial values stored in the memory, with a latest value of the runout component acquired by the adaptive learning means, the one of the initial values corresponding to a present head position.

3. The system according to claim 1, wherein the determination means includes means for replacing, each time the adaptive learning means acquires a value of the runout component, one of the initial values stored in the memory, with the value of the runout component, the one of the initial values corresponding to a present head position.

4. The system according to claim 1, further comprising control means for causing, upon activation of the disk drive, the adaptive learning means to acquire, by adaptive learning, the values of the runout component in the respective predetermined radial positions on the disk, thereby storing the values of the runout component acquired in the respective predetermined radial positions, in the

memory.

5. The system according to claim 1, further comprising:

a nonvolatile memory to prestore the values of the runout component acquired in the respective predetermined radial positions on the disk; and

correction means for causing, upon activation of the disk drive, the adaptive learning means to acquire, by adaptive learning, a value of the runout component in a predetermined radial position on the disk, the correction means also estimating the values of the runout component acquired at present in the respective predetermined radial positions on the basis of the value of the runout component acquired by the adaptive learning means in the predetermined radial position, and on the basis of the values of the runout component corresponding to the respective predetermined radial positions, and storing the estimated values of the runout component in the rewritable memory, the values of the runout component corresponding to the respective predetermined radial positions being stored in the nonvolatile memory.

6. The system according to claim 1, wherein the determination means divides the disk into a plurality of zones corresponding to the respective predetermined radial positions on the disk, thereby managing the plurality of zones, selecting, from the memory,

a value the runout component corresponding to one of the zones, to which the target position belongs, and using the selected value as one of the initial values.

7. The system according to claim 1, wherein:

the seek control enables one of two heads, which correspond to respective two recording surfaces of the disk, to be moved to the target position, the one of the heads corresponding to one of the recording surfaces, on which the target position exists;

the memory stores, for each of the recording surfaces of the disk, the values of the runout component obtained in the respective predetermined radial positions, the values of the runout component being used as the initial values in adaptive learning executed by the adaptive learning means; and

the determination means selects, from the memory, one of the initial values used in adaptive learning executed by the adaptive learning means, the one of the initial values corresponding to the one of the recording surfaces on which the target position exists, and corresponding to the target position.

8. The system according to claim 1, wherein:

the seek control enables one of heads, which correspond to respective recording surfaces of a plurality of disks each including at least one recording surface, to be moved to the target position, the one of the heads corresponding to one of the

recording surfaces, on which the target position

exists;

the memory stores, for each of the recording

surfaces of the disk, the values of the runout

5   component obtained in the respective predetermined

radial positions, the values of the runout component

being used as the initial values in adaptive learning

executed by the adaptive learning means; and

the determination means selects, from the memory,

10   one of the initial values used in adaptive learning

executed by the adaptive learning means, the one of

the initial values corresponding to the one of the

recording surfaces on which the target position

exists, and corresponding to the target position.

15   9.   A system for head positioning control that

includes seek control used to move a head to a target

position on a disk, and track following control used

to situate the head in a target area related to the

target position, comprising:

20   means for detecting a position error between

a position of the head and the target position;

means for calculating, from the position error,

a feedback value used to eliminate the position error;

adaptive learning means for acquiring, by

25   adaptive learning, a runout component that is included

in the position error and synchronous with a rotation

of the disk;

means for calculating a feedforward value used to suppress the runout component acquired by the adaptive learning means;

means for generating, from the feedback value and

5 the feedforward value, a control amount used to situate the head in the target position;

a rewritable memory to store runout characteristic information indicative of the relationship between the runout component and a radial position on the

10 disk, and obtained from values of the runout component obtained in respective predetermined radial positions on the disk; and

determination means for estimating a value of the runout component in the target position, on the basis

15 of the target position and the runout characteristic information stored in the memory, and supplying the adaptive learning means with the estimated value of the runout component as an initial value necessary for adaptive learning executed by the adaptive learning

20 means.

10. The system according to claim 9, further comprising control means for causing, upon activation of the disk drive, the adaptive learning means to acquire, by adaptive learning, the values of the

25 runout component in the respective predetermined radial positions on the disk, thereby acquiring the runout characteristic information on the basis of a

learning result, and storing the runout characteristic
information in the memory.

11. The system according to claim 9, further
comprising:

5   a nonvolatile memory to prestore the runout
characteristic information obtained from the values of
the runout component in the respective predetermined
radial positions on the disk; and

        correction means for causing, upon activation of
10   the disk drive, the adaptive learning means to
acquire, by adaptive learning, a value of the runout
component in a predetermined radial position on the
disk, the correction means also estimating a runout
characteristic indicative of the present relationship
15   between the runout component and a radial position on
the disk on the basis of the value of the runout
component acquired by the adaptive learning means in
the predetermined radial position, and the runout
characteristic information stored in the nonvolatile
20   memory, and storing the estimated values of the runout
component in the rewritable memory.

12. The system according to claim 9, wherein:
        the seek control enables one of two heads, which
correspond to respective two recording surfaces of
25   the disk, to be moved to the target position, the one
of the heads corresponding to one of the recording
surfaces, on which the target position exists;

the memory stores, for each of the recording
surfaces of the disk, the runout characteristic
information; and

the determination means estimates a value of the
5   runout component in the target position on the basis
of the target position, and the runout characteristic
information which is included in the runout character-
istic information stored for each recording surface in
the memory, and corresponds to one of the recording
10 surfaces on which the target position exists.

13.   The system according to claim 9, wherein:

the seek control enables one of heads, which
correspond to respective recording surfaces of
a plurality of disks each including at least one
15 recording surface, to be moved to the target position,
the one of the heads corresponding to one of the
recording surfaces, on which the target position
exists;

the memory stores, for each of the recording
20 surfaces of the disk, the runout characteristic
information; and

the determination means estimates a value of the
runout component in the target position on the basis
of the target position, and the runout characteristic
25 information which is included in the runout
characteristic information stored for each recording
surface in the memory, and corresponds to one of the

recording surfaces on which the target position exists.

14. A disk drive apparatus comprising:

at least one disk including at least one recording surface;

a rotary actuator that supports at least one head provided corresponding to the at least one recording surface of the at least one disk, and drives the at least one head in a radial direction of the at least one disk, the at least one head being used to read/write data from and into the at least one recording surface; and

a head positioning control system configured to drive the rotary actuator to thereby execute seek control to move the at least one head to a target position on the at least one disk, and execute track following control to position the at least one head in a target area related to the target position, including:

means for detecting a position error between a position of the at least one head and the target position;

means for calculating, from the position error, a feedback value used to eliminate the position error;

adaptive learning means for acquiring, by adaptive learning, a runout component that is included

in the position error and synchronous with a rotation
of the at least one disk;

means for calculating a feedforward value
used to suppress the runout component acquired by the

5   adaptive learning means;

means for generating, from the feedback
value and the feedforward value, a control amount used
to position the at least one head in the target
position;

10   a memory to store values of the runout
component, which are obtained in respective predeter-
mined radial positions on the at least one disk and
are used as initial values in adaptive learning
executed by the adaptive learning means; and

15   determination means for selecting, from the
memory, one of the initial values, used in adaptive
learning by the adaptive learning means, in accordance
with the target position, and supplying the selected
initial value to the adaptive learning means.

20   15. A disk drive apparatus comprising:

at least one disk including at least one
recording surface;

a rotary actuator that supports at least one head
provided corresponding to the at least one recording

25   surface of the at least one disk, and drives the at
least one head in a radial direction of the at least
one disk, the at least one head being used to

read/write data from and into the at least one
recording surface; and

a head positioning control system configured to
drive the rotary actuator to thereby execute seek
5 control to move the at least one head to a target
position on the at least one disk, and execute track
following control to position the at least one head in
a target area related to the target position,
including:

10 means for detecting a position error between
a position of the at least one head and the target
position;

means for calculating, from the position
error, a feedback value used to eliminate the position
15 error;

adaptive learning means for acquiring, by
adaptive learning, a runout component that is included
in the position error and synchronous with a rotation
of the at least one disk;

20 means for calculating a feedforward value
used to suppress the runout component acquired by the
adaptive learning means;

means for generating, from the feedback
value and the feedforward value, a control amount used
25 to position the at least one head in the target
position;

a memory to store a runout characteristic

indicative of the relationship between the runout

component and a radial position on the at least one

disk, and obtained from values of the runout component

obtained in respective predetermined radial positions

5   on the at least one disk; and

determination means for estimating a value

of the runout component in the target position, on the

basis of the target position and the runout character-

istic stored in the memory, and supplying the adaptive

10   learning means with the estimated value of the runout

component as an initial value necessary for adaptive

learning executed by the adaptive learning means.

16.   A method of executing head positioning

control that includes seek control used to move a head

15   to a target position on a disk, and track following

control used to position the head in a target area

related to the target position, comprising:

pre-acquiring, by learning, values of a runout

component synchronous with a rotation of the disk, in

20   respective predetermined radial positions on the disk;

calculating a feedback value on the basis of a

position error between a head position and the target

position to thereby eliminate the position error, each

time the position error is detected;

25   acquiring, by adaptive learning, a value of

the runout component contained in the position error,

at least during the track following control, each time

the position error is detected;

selecting an initial value, used in the adaptive learning, from the values of the runout component pre-acquired in the respective predetermined radial

5   positions, in accordance with the target position;

calculating a feedforward value to suppress the runout component acquired by the adaptive learning; and

generating, from the feedback value and the

10   feedforward value, a control amount used to position the head in the target position.

17. A method of executing head positioning control that includes seek control used to move a head to a target position on a disk, and track following

15   control used to position the head in a target area related to the target position, comprising:

pre-acquiring, by learning, values of a runout component synchronous with a rotation of the disk, in respective predetermined radial positions on the disk,

20   and extracting a runout characteristic indicative of the relationship between the runout component and a radial position on the disk;

calculating a feedback value on the basis of a position error between a head position and the target

25   position to thereby eliminate the position error, each time the position error is detected;

acquiring, by adaptive learning, a value of

the runout component contained in the position error, at least during the track following control, each time the position error is detected;

estimating an initial value, used in the adaptive learning, from the target value and the extracted runout characteristic;

calculating a feedforward value to suppress the runout component acquired by the adaptive learning; and

generating, from the feedback value and the feedforward value, a control amount used to position the head in the target position.